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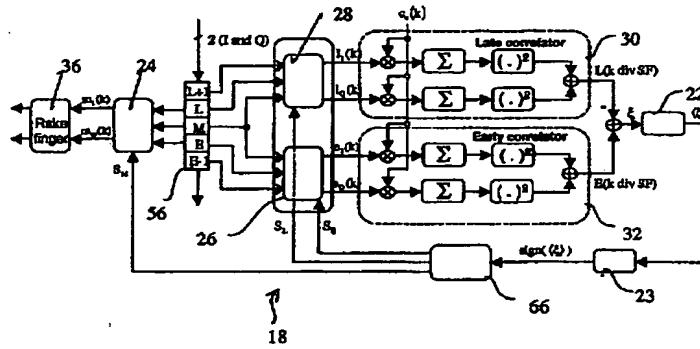
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(54) Title: METHOD AND DEVICE FOR FINE SYNCHRONIZATION OF A DIGITAL TELECOMMUNICATION RECEIVER



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(57) **Abstract:** A method for the synchronization of a digital telecommunication receiver comprises the steps of: - storing a plurality of consecutive samples E-l, E, M, L, L+1 of an incoming spread spectrum signal in a delay line 56; - determining by interpolation between consecutive samples of the incoming spread spectrum signal, by means of a first digitally controlled interpolator 26, an interpolated early sample (e) anticipating an optimal sampling time instant; - determining by interpolation between consecutive samples of the incoming spread spectrum signal, by means of a second digitally controlled interpolator 24, an interpolated middle sample (m) corresponding to the optimal sampling time instant; - determining by interpolation between consecutive samples of the incoming spread spectrum signal, by means of a third digitally controlled interpolator 28, an interpolated late sample (l) delayed with respect to the optimal sampling time instant; - calculating an error signal  $\xi$  as the difference between the energy of the symbols computed from the interpolated early sample (e) and the interpolated late (l) sample; - extracting the sign of the error signal  $\xi$  - accumulating the sign of the error signal  $\xi$  for the generation of control signals  $S_E$ ,  $S_M$ ,  $S_L$  for controlling the interpolation phases of the digitally controlled interpolators used for determining the interpolated early (e), middle (m) and late (l) samples. The accumulated value has a positive saturation value of +4 and a negative saturation value of -4.

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